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Hargreaves, JR; Busza, J; Mushati, P; Fearon, E; Cowan, FM (2016) Overlapping HIV and sex-work stigma among female sex workers recruited to 14 respondent-driven sampling surveys across Zimbabwe, 2013. *AIDS care*, 29 (6). pp. 675-685. ISSN 0954-0121 DOI: <https://doi.org/10.1080/09540121.2016.1268673>

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**Overlapping HIV and sex-work Stigma among female sex-workers recruited to 14 respondent-driven sampling surveys across Zimbabwe, 2013**

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## **ABSTRACT (240 WORDS)**

HIV stigma can inhibit uptake of HIV testing and antiretroviral therapy as well as negatively affect mental health. Efforts to reduce discrimination against people living with HIV have contributed to greater acceptance of the infection. Female sex-workers (FSW) living with HIV may experience overlapping stigma due to both their work and HIV status, although this is poorly understood. We examined HIV and sex-work stigma experienced by FSW living with HIV in Zimbabwe. Using the SAPPH-IRe cluster-randomised trial baseline survey we analysed data from 1039 FSW self-reporting HIV. The women were recruited in 14 sites using respondent-driven sampling. We asked five questions to assess internalised and experienced stigma related to working as a sex-worker, and the same questions were asked in reference to HIV. Among all FSW, 91% reported some form of sex-work stigma. This was not associated with socio-demographic or sex-work characteristics. Rates of sex-work stigma were higher than those of HIV-related stigma. For example, 38% reported being “talked badly about” for living with HIV compared with 77% for their involvement in sex-work. Those who reported any sex-work stigma also reported experiencing more HIV stigma compared to those who did not report sex-work stigma, suggesting a layering effect. FSW in Zimbabwe experience stigma for their role as “immoral” women and this appears more prevalent than HIV stigma. As HIV stigma attenuates, other forms of social stigma associated with the disease may persist and continue to pose barriers to effective care.

## INTRODUCTION (1520 WORDS)

Stigma can inhibit uptake of HIV testing (Kelly, Weiser, & Tsai, 2016) and antiretroviral treatment (ART) (B. T. Chan et al., 2015; Katz et al., 2013; Talam, Gatongi, Rotich, & Kimaiyo, 2008). HIV's infectiousness and association with behaviours considered immoral underpin this stigma (Parker & Aggleton, 2003; Roura et al., 2009; Tsai et al., 2016). Internalised stigma affects individuals' self-esteem (Nam et al., 2008; Tsai et al., 2013), while experienced stigma relates to discrimination by others (Liu et al., 2011; Peitzmeier, Grosso, Bowes, Ceesay, & Baral, 2015). Growing availability of ART appears to have reduced HIV stigma (Campbell et al., 2011; Chan, Tsai, & Siedner, 2015; Roura et al., 2009) alongside interventions to change public attitudes (Stangl, Lloyd, Brady, Holland, & Baral, 2013; Tsai et al., 2016).

Female sex-workers (FSW) living with HIV (LWH), however, may experience overlapping stigma due to their involvement in sex-work (Logie, James, Tharao, & Loutfy, 2011; Rogers et al., 2014). There is little research on this phenomenon. We examined the intersection of stigma using data from a survey of FSW recruited in 14 sites across Zimbabwe as part of baseline assessments for a cluster-randomised trial (Hargreaves et al., 2016). In Zimbabwe sex-work remains both criminalised and stigmatised. We hypothesised that FSW LWH would experience overlapping stigma, with sex-work stigma being more prevalent than HIV stigma.

## METHODS

In 2013, we conducted respondent driven sampling (RDS) surveys in 14 locations in Zimbabwe for the SAPPH-IRE trial (PACTR201312000722390). In each site 6-8 "seed" women representing different types of locally available sex-work (e.g. bar, guesthouse, truck stop or street-based) were enrolled and provided with two coupons to recruit peers. Every subsequent participant was given two coupons for further recruitment. A small financial incentive was provided when women joined the study (US\$5 for the survey and US\$2 each for up to 2 recruited peers). The target sample size was 200 women per site and we recruited 2722 FSW in total. Following written informed consent, participants underwent a fieldworker-administered interview. Data were collected on socio-demographic variables, HIV testing, antiretroviral therapy, and experiences of HIV and sex-work stigma. Dried blood spot samples were collected and tested for HIV.

We asked women to respond to 5 statements in relation first to being a sex worker and then to being HIV positive. Two were on a 4-point Likert scale: 1) "I have felt ashamed"; and 2) "I have lost respect or standing in the community"; and then three asked the frequency that women had experienced: 3) "people have talked badly about me"; 4) "I have been denied health services" and 5) "I have been verbally assaulted, harassed and/or threatened". Agree/strongly agree responses were coded as 'yes' and disagree/strongly disagree as 'no' and experiences were counted if they happened at least once. Women were also asked whether they had ever disclosed their HIV status to anyone.

We applied RDS-II methodology, which weights individual participant responses by the inverse of their reported number of social contacts whom they would potentially have referred to the survey (Volz & Heckathorn, 2008). We report RDS diagnostic statistics elsewhere (Cowan et al., 2016), but found little evidence of seed dependency by HIV status. We included those women who self-reported and tested as being HIV positive and who had no missing sociodemographic, sex-work or stigma data (n= 1039). We calculated the RDS-II weighted prevalence of each characteristic. We examined intercorrelation among the sex-work and then among the HIV stigma variables and calculated Cronbach's alpha. As intercorrelation was low (alpha=0.47 for sex-work stigma and 0.56 for HIV stigma) we report prevalence for each item separately. We calculated two dependent variables reflecting experience of any type of HIV stigma and any type of sex-work stigma, and explored risk factors for these in individual-level logistic regression. Our models dropped seed participants, applied normalised inverse-weights for participant network size and fixed effects for site, and explored the effect of the socio-demographic and sex-work related variables on experience of stigma. We also conducted these analyses for each of the five sex-work stigma items and each of the

five HIV stigma outcomes in turn and found that patterns of association between sociodemographic and sex-work characteristics and each of the stigma outcomes were similar to the combined variables. These additional analyses are available in a webappendix.

## RESULTS

Among 1039 FSW LWH, 54.4% had secondary education and 54.6% were divorced (Table 1). Their mean age was 35.2, most reported starting sex-work in their 20s and had between 1 and 10 clients weekly, while 83.4% had ever-disclosed their HIV status.

Sex-work stigma was more commonly reported than HIV stigma for both internalised and experienced forms (Figure 1). For instance, 44.1% of FSW reported “feeling ashamed” due to sex-work compared to 19.1% reporting shame due to HIV; 62.0% of FSW felt they had “lost respect or standing” as a result of sex-work and 21.6% due to HIV. Reporting having been “talked about badly” for being FSW or LWH, the figures were 76.9% and 38.2%. Similarly, 44.8% reported being verbally assaulted as FSW but just 15.8% for living with HIV. Denial of services by health care workers was also perceived to be higher as a result of sex-work (8.5 %) compared to HIV (1.7%). Whether women had ever disclosed their HIV status did not affect either stigma.

Almost all (91.2%) FSW reported experiencing at least one type of sex work related stigma compared to half (51.6%) reporting any HIV stigma experiences (Table 2). There was little evidence of an association between sociodemographic or sex-work characteristics and either stigma. However, there was evidence of overlapping stigma, as women reporting any sex-work related stigma were much more likely to also report HIV related stigma, (adjusted OR 6.95, 95% CI 3.16-15.17).

## DISCUSSION

Among a large sample of FSW LWH from 14 sites in Zimbabwe we found high levels of reported internalised and experienced stigma. Stigma perceived to result from sex work exceeded that of HIV-related stigma, and appeared to augment experience of any stigma.

Limitations of our research include potentially inaccurate reporting due to social desirability bias (Mirzazadeh et al., 2013). We asked few questions about stigma, although these were informed by previous research (Stangl, Brady, & Fritz, 2012). Applying the same wording for questions on HIV stigma to sex-work stigma is new, reflecting the literature (Visser, Kershaw, Makin, & Forsyth, 2008) on parallel stigma, and thus should be treated with some caution particularly as sex-workers may find it difficult to identify causes of specific stigma experiences. It is also likely that visibility of participating in sex-work is greater than for LWH, possibly explaining lower levels of reported HIV stigma. However, we found differences for internalised as well as experienced stigma, with no evidence that disclosure of HIV status influenced either type of stigma. Our data support the hypothesis that Zimbabwe is undergoing a shift in relative levels of stigma associated with HIV-infection and sex-work (Bodkin, Delahunty-Pike, & O'Shea, 2015; Mtetwa, Busza, Chidiya, Mungofa, & Cowan, 2013; Scorgie et al., 2013). Our finding of high levels of reported stigma is consistent with other studies, for example the Zimbabwe stigma index found 65.5 % of people LWH reported stigma while the proportion was higher proportion among sex-workers (90.5%).

Legal restrictions exacerbate discrimination against sex-workers (Stahlman et al., 2015; WHO, 2015). Punitive laws both reflect and drive stigmatisation (WHO, 2015), creating an environment that condones human rights violations against sex-workers (Karandikar & Prospero, 2010; Scorgie et al., 2013). This constrains sex-workers' ability to control their lives, reduce levels of risk, and organise collectively to improve conditions, all of which negatively affect uptake of HIV prevention and treatment services (Pando et al., 2013). There are increasing calls for governments to address legal impediments to accessible services for sex-workers, with stigma reduction a critical component (Grubb et al., 2014; Jeffreys, Matthews, & Thomas, 2010). Even in the absence of criminalisation, however, social stigma against sex-workers persists (Begum, Hocking, Groves, Fairley, & Keogh, 2013) and can discourage them from admitting their occupation to providers and obtaining comprehensive examinations (Abel, 2014; Folch, Lazar, Ferrer, Sanclemente, & Casabona, 2013). Health providers sometimes express greater bias against sex-workers than other

people LWH (Roche & Keith, 2014; Rogers et al., 2014). A study in Canada, for example, found sex-work stigma to be an independent determinant of restricted access to health care (Lazarus et al., 2012). The persistence of stigma against FSW even in contexts where legal barriers have been removed suggests that targeted services will continue to play an important role in meeting sex-workers' health needs.

Sex-work and HIV remain stigmatised in Zimbabwe. While HIV stigma may be declining, sex-work stigma persists. Programmes for sex-workers should confront stigma, strengthen community and support collective action to build self-esteem and work toward mutual goals (Chakrapani, Newman, Shunmugam, Kurian, & Dubrow, 2009; Deering et al., 2011; Robillard, 2010). However, creation of dedicated spaces for sex-workers can dissuade some from participating if they are reluctant to self-identify as sex-workers and risk resulting stigmatisation (Biradavolu, Blankenship, Jena, & Dhungana, 2012). Navigating the complex social environment inhabited by sex-workers, and ensuring services are perceived as welcoming to women selling sex whether they identify as sex-workers or not, remains an evolving priority in HIV programming.

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## Figures and Tables

Table 1: Sociodemographics and sex-work-related characteristics among 1039 female sex-workers who self-report being HIV positive recruited at 14 sites across Zimbabwe

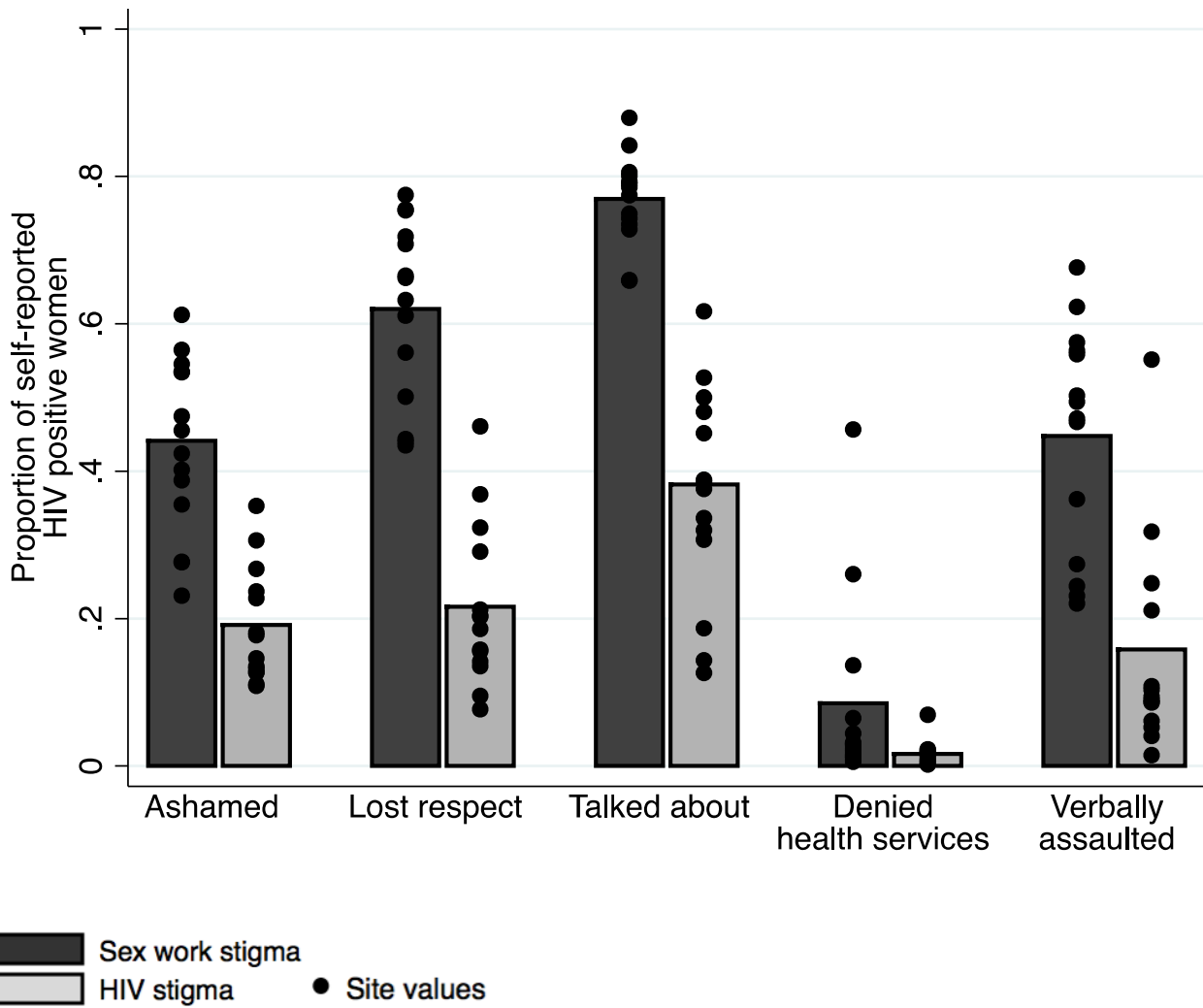
Sociodemographic Characteristics		N=1039	RDS2 Weighted %*	Range of RDS2 weighted site %'s
Age (years)	(mean years)	34.8 (unweighted)	35.2 (weighted)	31.6-39.1
Highest education	None/primary	413	45.6	17.8-67.3
	Secondary	626	54.4	32.7-82.2
Marital Status	Currently married	8	0.6	0-3.1
	Divorced	607	54.6	35.0-77.0
	Widowed	296	33.4	12.1-46.6
	Never married	128	11.3	2.8-29.4
<b>Sex-work characteristics</b>				
Age began sex-work	(mean years)	26.0 (unweighted)	27.0 (weighted)	24.2-33.7
No. clients per week	None	90	9.0	2.9-18.7
	1-4	395	43.4	21.8-69.3
	5-9	254	24.3	7.4-47.6
	10 or more	300	23.3	5.7-43.3
<b>Sex-work related stigma</b>				
Ashamed	Agree or Strongly Agree	420	44.1	23.1-61.2
Lost respect	Agree or Strongly Agree	644	62.0	43.5-77.5
Talked about	Once, a few times or often	809	76.9	65.9-88.0
Denied health services	Once, a few times or often	55	8.5	0.6-45.7
Verbally assaulted	Once, a few times or often	519	44.8	22.0-67.7
<b>HIV related Stigma</b>				
Has disclosed HIV Positive status (Have you ever told anyone the results of your HIV test(s)?)	Yes	886	83.4	5.0-39.1
Ashamed	Agree or Strongly Agree	186	19.1	10.9-35.3
Lost respect	Agree or Strongly Agree	222	21.6	7.7-46.1
Talked about	Once, a few times or often	314	38.2	12.6-61.7
Denied health services	Once, a few times or often	24	1.7	0.2-6.9
Verbally assaulted	Once, a few times or often	145	15.8	1.5-55.1

Footnotes:

\*Participants pooled across the 14 sites and inverse degree weights normalised across sites.

1039 / 1118 women included in the analysis as they tested HIV positive, had complete data on stigma, self-reported HIV status, and socio-demographic variables

Figure 1: Experiences of stigma and discrimination associated with being a sex-worker and with being HIV positive among 1039 self-reported HIV positive female sex-workers from 14 sites in Zimbabwe



Bars give RDS-2 weighted proportions pooled across sites, while dots give individual site values.

Table 2: Associations between sex workers' sociodemographic and sex work characteristics and whether they have experience of 1) any type of sex work related stigma and 2) any type of HIV related stigma

Any type of sex work related stigma	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
	946/1039	91.2	OR	95% CI	p value	OR	95% CI	p value
Age (years)	35.5 (mean no)	35.0 (mean yes)	0.99	0.95-1.03	0.601	1.00	0.95-1.06	0.906
<b>Highest education</b>								
None/primary	383/413	93.0	1		0.318	1		0.276
Secondary	563/626	89.8	0.71	0.37-1.38		0.69	0.36-1.34	
<b>Marital Status</b>								
Never married	120/128	92.2	1		0.579	1		0.915
Ever married	826/911	91.1	0.74	0.25-2.15		0.94	0.31-2.85	
<b>Disclosure of HIV positive status</b>								
No	136/153	89.8	1		0.486	1		0.392
Yes	810/886	91.5	1.33	0.60-2.93		1.43	0.63-3.23	
Age began sex-work (years)	27.8 (mean no)	26.9 (mean yes)	0.97	0.93-1.01	0.184	0.97	0.91-1.03	0.267
<b>No. clients in the last week</b>								
None	83/90	85.8	0.41	0.13-1.30	0.494	0.41	0.12-1.33	0.526
1-4	363/395	91.8	1			1		
5-9	230/254	92.7	0.76	0.34-1.68		0.76	0.33-1.71	
10+	270/300	90.4	0.69	0.29-1.62		0.70	0.29-1.69	
<b>Any type of HIV related stigma</b>	<b>N</b>	<b>RDS2 Weighted %</b>	<b>Unadjusted Odds Ratio</b>			<b>Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week</b>		
	502/1039	51.6	OR	95% CI	p value	OR	95% CI	p value
Age (years)	34.5 (mean no)	35.2 (mean yes)	1.02	0.99-1.04	0.224	1.01	0.98-1.04	0.481
<b>Highest education</b>								
None/primary	213/413	55.7	1		0.168	1	0.54-1.21	0.296
Secondary	289/626	48.3	0.75	0.50-1.13		0.81		
<b>Marital Status</b>								
Never married	68/128	50.0	1		0.776	1		0.807
Ever married	434/911	51.8	1.09	0.61-1.95		1.08	0.58-2.01	
<b>Disclosure of HIV positive status</b>								
No	64/153	45.1	1		0.807	1		0.848
Yes	438/886	52.8	1.07	0.63-1.81		1.05	0.62-1.79	
Age began sex-work	26.2 (mean no)	25.8 (mean yes)	1.01	0.98-1.04	0.573	1.00	0.96-1.04	0.925
<b>No. clients in the last week</b>								
None	42/90	48.5	0.91	0.41-2.04	0.451	0.89	0.39-2.01	0.580
1-4	198/395	57.4	1.17	0.68-2.02		1.12	0.66-1.91	
5-9	123/254	53.0	1			1		
10+	139/300	41.5	0.79	0.45-1.41		0.80	0.45-1.43	
<b>Report any sex work related stigma</b>								
No	16/93	17.5	1		<0.001	1		<0.001
Yes	486/946	54.9	6.67	3.09-14.39		6.95	3.16-15.27	

Both unadjusted and adjusted models reflect the study design by including a fixed term for site, dropping seed participants and weighting by inverse degree normalised by site. P values are from Wald tests.

## **APPENDIX: ASSOCIATIONS BETWEEN INDIVIDUAL STIGMA TYPES AND SEX WORKERS' SOCIODEMOGRAPHIC AND SEX WORK CHARACTERISTICS**

Tables 3a-e: Association between socio-demographic and sex-work related factors and experience of (i) sex-work related stigma and, (ii) HIV-related stigma among 1039 self-reported HIV-positive FSW

For all analyses, both the unadjusted and adjusted models reflect the study design by including a fixed term for site, dropping seed participants and weighting by inverse degree normalised by site. All p values are from Wald tests.

Table 3a: Associations with feeling ashamed i) because a sex-worker and ii) because HIV positive

Because a sex-worker	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
			OR	95% CI	p value	OR	95% CI	p value
<b>Age (years)</b>	34.3 (mean no)	36.0 (mean yes)	1.03	1.00-1.05	0.058	1.01	0.98-1.04	0.443
<b>Highest education</b>								
None/primary	164/413	48.7	1		0.069	1		0.205
Secondary	256/626	39.2	0.68	0.45-1.03		0.76	0.50-1.16	
<b>Marital Status</b>								
Never married	47/128	44.3	1		0.625	1		0.439
Ever married	373/911	43.3	0.86	0.48-1.55		0.79	0.43-1.45	
<b>Disclosure of HIV positive status</b>								
No	66/153	45.2	1		0.754	1		0.661
Yes	354/886	43.0	0.92	0.55-1.55		0.89	0.53-1.50	
<b>Age began sex-work (years)</b>	26.3 (mean no)	27.8 (mean yes)	1.02	0.99-1.05	0.225	1.01	0.97-1.05	0.597
<b>No. clients in the last week</b>								
None	51/90	49.2	1.51	0.70-3.28	0.378	1.50	0.68-3.29	0.035
1-4	182/395	53.8	1.85	1.09-3.94		1.73	1.03-2.91	
5-9	88/254	35.7	1			1		
10+	99/300	32.1	0.80	0.46-1.42		0.82	0.47-1.45	
<b>Because HIV positive</b>	<b>N</b>	<b>RDS-II Weighted %</b>	<b>Unadjusted Odds Ratio</b>			<b>Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week</b>		
			<b>OR</b>	<b>95% CI</b>	<b>p value</b>	<b>OR</b>	<b>95% CI</b>	<b>p value</b>
<b>Age (years)</b>	35.1 (mean no)	34.9 (mean yes)	0.99	0.96-1.02	0.626	0.99	0.95-1.03	0.4510
<b>Highest education</b>								
None/primary	82/413	20.0	1		0.492	1		0.491
Secondary	104/626	16.7	0.84	0.52-1.37		0.84	0.51-1.38	
<b>Marital Status</b>								
Never married	26/128	23.2	1		0.396	1		0.635
Ever married	160/911	17.5	0.74	0.36-1.49		0.84	0.40-1.75	
<b>Disclosure of HIV positive status</b>								
No	23/153	17.9	1		0.889	1		0.793
Yes	163/886	18.2	1.05	0.53-2.10		1.09	1.57-2.11	
<b>Age began sex-work</b>	27.1 (mean no)	26.4 (mean yes)	0.99	0.95-1.02	0.437	0.99	0.95-1.03	0.699
<b>No. clients in the last week</b>								
None	17/90	21.0	1.93	0.71-5.26	0.007	2.04	0.75-5.56	0.007
1-4	87/395	25.9	2.57	1.31-5.03		2.64	1.35-5.16	
5-9	42/254	11.3	1			1		
10+	40/300	11.4	1.03	0.49-2.16		1.04	0.50-2.17	
<b>Reports feeling ashamed because a sex-worker</b>						-	-	
No	58/619	8.2	1		<0.001	1		<0.001
Yes	128/420	31.1	5.18	2.94-9.11		4.96	2.84-8.69	

Table 3b: Lost respect or social standing

Because a sex-worker	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
			OR	95% CI	p value*	OR	95% CI	p value
Age (years)	35.3 (mean no)	34.9 (mean yes)	1.00	0.97-1.03	0.840	1.02	0.99-1.05	0.298
<b>Highest education</b>					0.700	0		0.645
None/primary	260/413	60.9	1			1		
Secondary	384/626	61.5	0.92	0.60-1.41		0.91	0.60-1.37	
<b>Marital Status</b>					0.091			0.361
Never married	83/128	71.9	1			1		
Ever married	561/911	59.9	0.59	0.32-1.09		0.73	0.38-1.42	
<b>Disclosure of HIV positive status</b>					0.307			0.325
No	89/153	56.6	1			1		
Yes	555/886	62.1	1.30	0.78-2.17		1.30	0.77-2.20	
Age began sex-work (years)	28.1 (mean no)	26.2 (mean yes)	0.97	0.94-1.00	0.095	0.96	0.93-1.00	0.078
<b>No. clients in the last week</b>					0.737			0.818
None	56/90	62.8	0.91	0.41-2.01		0.91	0.40-2.07	
1-4	242/395	59.0	0.77	0.45-1.32		0.79	0.47-1.34	
5-9	161/254	66.2	1			1		
10+	185/300	59.1	0.75	0.42-1.32		0.79	0.45-1.40	
Because HIV positive	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
			OR	95% CI	p value	OR	95% CI	p value
Age (years)	35.0 (mean no)	35.2 (mean yes)	1.00	0.97-1.03	0.966	0.99	0.96-1.04	0.968
<b>Highest education</b>					0.026			0.032
None/primary	106/413	27.1	1			1		
Secondary	116/626	17.9	0.59	0.37-0.94		0.59	0.36-0.96	
<b>Marital Status</b>					0.315			0.451
Never married	28/128	26.4	1			1		
Ever married	194/911	21.4	0.72	0.37-1.38		0.77	0.39-1.52	
<b>Disclosure of HIV positive status</b>					0.583			0.625
No	33/153	23.3	1			1		
Yes	189/886	21.7	0.84	0.45-1.56		0.86	0.47-1.56	
Age began sex-work	27.1 (mean no)	26.3 (mean yes)	0.98	0.95-1.01	0.300	0.98	0.95-1.02	0.423
<b>No. clients in the last week</b>					0.453			0.461
None	19/90	25.5	1.80	0.69-4.72		1.91	0.73-5.01	
1-4	86/395	25.2	1.45	0.78-2.82		1.44	0.76-2.72	
5-9	55/254	18.9	1			1		
10+	62/300	18.5	1.05	0.55-2.02		1.07	0.56-2.03	
<b>Reports lost respect or social standing due to being a sex-worker</b>					<0.001	-	-	<0.001
No	37/395	9.5	1			1		
Yes	185/644	29.8	4.33	2.45-7.65		4.33	2.45-7.66	

Table 3c: Talked badly about

Because a sex-worker	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
			OR	95% CI	p value	OR	95% CI	p value
<b>Age (years)</b>	34.5 (mean no)	35.2 (mean yes)	1.01	0.98-1.04	0.613	1.01	0.98-1.04	0.491
<b>Highest education</b>					0.790			0.643
None/primary	322/413	76.8	1			1		
Secondary	487/626	76.1	1.07	0.67-1.70		1.11	0.71-1.76	
<b>Marital Status</b>					0.867			0.619
Never married	103/128	75.3	1			1		
Ever married	706/911	76.5	1.06	0.55-2.03		1.20	0.59-2.43	
<b>Disclosure of HIV positive status</b>					0.318			0.375
No	115/153	71.2	1			1		
Yes	694/886	77.4	1.34	0.75-2.39		1.29	0.73-2.27	
<b>Age began sex-work (years)</b>	26.7 (mean no)	27.0 (mean yes)	1.00	0.96-1.03	0.904	0.99	0.95-1.03	0.549
<b>No. clients in the last week</b>					0.279			0.309
None	73/90	75.0	0.76	0.31-1.86		0.72	0.29-1.79	
1-4	308/395	78.8	0.87	0.46-1.63		0.87	0.47-1.62	
5-9	208/254	80.5	1			1		
10+	220/300	68.7	0.57	0.30-1.07		0.58	0.31-1.09	
<b>Because HIV positive</b>	<b>N</b>	<b>RDS-II Weighted %</b>	<b>Unadjusted Odds Ratio</b>			<b>Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work, no. of clients in last week</b>		
			<b>OR</b>	<b>95% CI</b>	<b>p value</b>	<b>OR</b>	<b>95% CI</b>	<b>p value</b>
<b>Age (years)</b>	34.0 (mean no)	36.9 (mean yes)	1.04	1.01-1.07	0.015	1.03	1.00-1.07	0.076
<b>Highest education</b>					0.028			0.094
None/primary	140/413	41.6	1			1		
Secondary	174/626	33.0	0.61	0.39-0.95		0.68	0.44-1.07	
<b>Marital Status</b>					0.923			0.663
Never married	48/128	38.4	1			1		
Ever married	266/911	36.6	0.97	0.52-1.81		0.86	0.44-1.69	
<b>Disclosure of HIV positive status</b>					0.461			0.570
No	30/153	28.3	1			1		
Yes	284/886	38.4	1.26	0.68-2.32		1.20	0.64-2.22	
<b>Age began sex-work</b>	26.3 (mean no)	28.0 (mean yes)	1.02	0.99-1.06	0.239	1.00	0.96-1.04	0.938
<b>No. clients in the last week</b>					0.505			0.563
None	26/90	28.3	0.59	0.24-1.44		0.54	0.22-1.35	
1-4	123/395	40.0	0.92	0.50-1.68		0.81	0.45-1.45	
5-9	77/254	41.6	1			1		
10+	88/300	29.4	0.71	0.38-1.34		0.73	0.38-1.39	
<b>Reports talked badly about due to being a sex-worker</b>					<0.001			<0.001
No	29/230	14.4	1			1		
Yes	285/809	43.7	4.90	2.59-9.26		5.08	2.65-9.74	



Table 3d: Denied health services

Because a sex worker	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
			OR	95% CI	p value	OR	95% CI	p value
<b>Age (years)</b>	35.2 (mean no)	33.0 (mean yes)	0.97	0.92-1.04	0.397	0.97	0.89-1.04	0.379
<b>Highest education</b>								
None/primary	22/308	7.6	1		0.257	1		0.381
Secondary	26/441	4.5	0.60	0.25-1.45		0.67	0.27-1.64	
<b>Marital Status</b>								
Never married	6/84	10.0	1		0.993	1		0.857
Ever married	42/665	5.5	1.00	0.24-4.14		0.88	0.22-3.51	
<b>Disclosure of HIV positive status</b>								
No	14/114	18.9	1		0.003	1		0.011
Yes	34/635	3.6	0.23	0.08-0.66		0.27	0.10-0.74	
<b>Age began sex-work (years)</b>	27.2 (mean no)	26.8 (mean yes)	1.01	0.94-1.07	0.875	1.04	0.96-1.13	0.301
<b>No. clients in the last week</b>								
None	3/73	0.3	0.07	0.09-0.67	0.003	0.09	0.01-0.91	0.012
1-4	19/290	7.4	2.15	0.76-6.10		1.82	0.59-5.65	
5-9	11/184	3.0	1			1		
10+	15/202	8.8	3.25	1.09-9.57		2.59	0.88-7.61	
Because HIV positive	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
			OR	95% CI	p value	OR	95% CI	p value
<b>Age (years)</b>	35.1 (mean no)	34.4 (mean yes)	0.99	0.93-1.06	0.865	1.01	0.93-1.09	0.837
<b>Highest education</b>								
None/primary	10/308	1.8	1		0.861	1		0.652
Secondary	13/441	1.8	1.11	0.34-3.58		1.29	0.42-3.94	
<b>Marital Status</b>								
Never married	3/84	0.9	1		0.325	1		0.465
Ever married	20/665	1.9	2.22	0.45-10.83		1.91	0.34-10.93	
<b>Disclosure of HIV positive status</b>								
No	5/114	4.9	1		0.033	1		0.042
Yes	18/635	1.3	0.25	0.07-0.89		0.25	0.07-0.95	
<b>Age began sex-work</b>	27.2 (mean no)	26.8 (mean yes)	1.01	0.93-1.08	0.890	1.00	0.89-1.12	0.967
<b>No. clients in the last week</b>								
None	3/73	0.2	0.13	0.01-1.42	0.069	0.11	0.01-1.45	0.077
1-4	6/290	1.9	1.39	0.29-6.68		1.33	0.27-6.69	
5-9	5/184	1.1	1			1		
10+	9/202	3.1	2.67	0.56-12.85		2.68	0.55-12.96	
<b>Reports any stigma related to sex-work</b>								
No	13/701	0.8	1		<0.001	1		<0.001
Yes	10/48	18.0	54.10	12.04-243.19		45.85	11.33-185.45	

In 4 of the 14 sites there were no women reporting that they had ben denied health services as the result of being a sex-worker or of being HIV positive. These clusters have therefore ben excluded from analysis and n=773.

Table 3e: Verbally assaulted

Because a sex-worker	N	RDS-II Weighted %	Unadjusted Odds Ratio			Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week		
			OR	95% CI	p value	OR	95% CI	p value
<b>Age (years)</b>	35.4 (mean no)	34.7 (mean yes)	0.99	0.97-1.02	0.620	1.01	0.98-1.04	0.492
<b>Highest education</b>					0.825			0.690
None/primary	219/413	45.5	1			1		
Secondary	300/626	46.1	0.95	0.63-1.44		0.92	0.61-1.39	
<b>Marital Status</b>					0.513			0.852
Never married	65/128	47.8	1			1		
Ever married	454/911	45.6	0.82	0.45-1.50		0.94	0.48-1.85	
<b>Disclosure of HIV positive status</b>					0.35			0.322
No	64/153	37.8	1			1		
Yes	455/886	47.3	1.29	0.75-2.19		1.33	0.76-2.32	
<b>Age began sex-work (years)</b>	27.7 (mean no)	26.1 (mean yes)	0.98	0.95-1.01	0.128	0.97	0.94-1.01	0.143
<b>No. clients in the last week</b>					0.202			0.177
None	44/90	38.3	0.64	0.30-1.37		0.64	0.30-1.37	
1-4	189/395	38.8	0.66	0.39-1.14		0.67	0.40-1.45	
5-9	128/254	53.6	1			1		
10+	158/300	52.0	1.07	0.60-1.87		1.10	0.62-1.96	
<b>Because HIV positive</b>	<b>N</b>	<b>RDS-II Weighted %</b>	<b>Unadjusted Odds Ratio</b>			<b>Odds Ratio adjusted for age, education, marital status, disclosure, age began sex work and no. of clients in the last week</b>		
			<b>OR</b>	<b>95% CI</b>	<b>p value</b>	<b>OR</b>	<b>95% CI</b>	<b>p value</b>
<b>Age (years)</b>	35.0 (mean no)	35.2 (mean yes)	1.00	0.97-1.03	0.983	1.00	0.96-1.04	0.844
<b>Highest education</b>					0.070			0.036
None/primary	67/413	17.0	1			1		
Secondary	78/626	14.1	0.59	0.33-1.04		0.54	0.30-0.96	
<b>Marital Status</b>					0.835			0.869
Never married	21/128	16.2	1			1		
Ever married	124/911	15.3	0.91	0.39-2.15		0.99	0.43-2.28	
<b>Disclosure of HIV positive status</b>					0.646			0.566
No	15/153	11.5	1			1		
Yes	130/886	16.1	1.21	0.53-2.76		1.34	0.61-2.94	
<b>Age began sex-work</b>	27.0 (mean no)	26.5 (mean yes)	0.99	0.96-1.03	0.770	0.99	0.95-1.03	0.998
<b>No. clients in the last week</b>					0.127			0.135
None	11/90	5.9	0.27	0.09-0.80		0.25	0.08-0.76	
1-4	57/395	13.4	0.58	0.25-1.35		0.56	0.25-1.28	
5-9	31/254	24.2	1			1		
10+	46/300	13.0	0.57	0.25-1.31		0.68	0.31-1.50	
<b>Reports verbally assaulted due to being a sex-worker</b>					<0.001	-	-	<0.001
No	26/520	3.3	1			1		
Yes	119/519	29.7	11.92	5.50-25.87		11.80	5.48-25.38	